

Applicant: Harwood, *et al.*
U.S.S.N.: 10/010,778
Filing Date: December 6, 2001
EMC Docket No.: EMC-01-217

In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Application.

Listing of Claims:

1. (Currently amended) A network adapter capable of being used to interface to a network environment a data storage system input/output (I/O) controller, the data storage system I/O controller residing in a first network data storage system, the network environment being external to the network data storage system, the network adapter comprising:

an interface capable of being used to couple the network adapter to the data storage system I/O controller via a backplane in the first data storage system, the interface comprising two first and second sets of data and control/management interfaces, thereby enabling multiple processing elements within the data storage system I/O controller to interact with respectively connected elements within the network adapter;

a switching system capable of being coupled to data exchanging devices in the network environment, the switching system being coupled to the data storage system I/O controller via the first data and control/management interface when the one or more interfaces couple on the network adapter to the data storage system I/O controller; and

port circuitry capable of being used to facilitate establishment of a link between the first network data storage system and a second network data storage system in the network environment, the second network data storage system being remote from the first network data storage system, the link, when established, facilitating establishment of a target device in the second network data storage system as a data mirroring device capable of comprising a mirror of

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data residing in a source device in the first network data storage system, said port circuitry being connected to the data storage system I/O controller via the second data and control/management interface on the network adaptor.

2. (Previously presented) The network adapter of claim 1, wherein the switching system comprises a fibre channel switching fabric.

3. (Previously presented) The network adapter of claim 1, wherein the network adapter is an electrical circuit card that is configured to be electrically and mechanically coupled to the backplane.

4. (Currently amended) A circuit card configured to be inserted into and received by a circuit card slot in a first network data storage system, the circuit card comprising:
an interface capable of being coupled via signal transmission system of the first network data storage system to an input/output (I/O) controller of the first network data storage system when the circuit card is inserted into the circuit card slot, the interface comprising two first and second sets of data and control/management interfaces, thereby enabling multiple processing elements within the data storage system I/O controller to interact with respectively connected elements within the network adapter;

a switch that may be coupled to data exchanging devices external to the circuit card and the first network data storage system, and that may be coupled to the I/O controller via the first

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data and control/management interface when the circuit card is inserted into the circuit card slot;
and

port circuitry that may be used to facilitate establishment of a link between the first network data storage system and a second network data storage system, the link, when established, facilitating data transmission from a source device to a target device, the source device being in the first network data storage system, the target device being in the second network data storage system and being used to mirror data residing in the source device, said port circuitry being connected to the data storage system I/O controller via the second data and control/management interface on the network adaptor.

5. (Previously presented) The circuit card of claim 4, wherein the switch comprises a fibre channel switch.

6. (Original) The circuit card of claim 4, wherein the source device and the target device comprise respective logical data volumes.

7. (Previously presented) The network adapter of claim 1, wherein the source device and the target device comprise respective logical data volumes.

8. (Original) The circuit card of claim 4, wherein the second network data storage system is geographically remote from the first network data storage system.

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9. (Currently amended) A method of using a network adapter that may be used to interface to a network environment a data storage system input/output (I/O) controller, the data storage system (I/O) controller residing in a first network data storage system, the network environment being external to the first network data storage system, the network adapter including an interface, a switching system, and port circuitry, the method comprising:

coupling the interface to the data storage system (I/O) controller via a backplane in the first network data storage system, the interface comprising two first and second sets of data and control/management interfaces, thereby enabling multiple processing elements within the data storage system I/O controller to interact with respectively connected elements within the network adapter;

coupling the switching system to data exchanging devices in the network environment, the switching system being coupled to the data storage system (I/O) controller when the interface couples the adapter to the data storage system (I/O) controller via the first data and control/management interface; and

using the port circuitry to facilitate establishment of a link between the first network data storage system and a second network data storage system in the network environment, the second network data storage system being remote from the first network data storage system, the link, when established, facilitating establishment of a target device in the second network data storage system as a data mirroring device that may comprise a mirror of data residing in a source device in the first network data storage system, said port circuitry being connected to the data storage system I/O controller via the second data and control/management interface on the network adaptor.

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10. (Original) The method of claim 9, wherein the switching system comprises a fibre channel switching fabric.

11. (Previously presented) The method of claim 9, wherein the network adapter is an electrical circuit card that is configured to be electrically and mechanically coupled to the backplane.

12. (Currently amended) A method of using a circuit card configured to be inserted into and received by a circuit card slot in a first network data storage system, the circuit card including an interface, a switch, and port circuitry, the method comprising:

coupling the interface via signal transmission system of the first network data storage system to an input/output (I/O) controller of the first network data storage system when the circuit card is inserted into the circuit card slot, the interface comprising two first and second sets of data and control/management interfaces, thereby enabling multiple processing elements within the data storage system I/O controller to interact with respectively connected elements within the network adapter;

coupling the switch to data exchanging devices external to the circuit card and the first network data storage system, and the switch also being coupled to the I/O controller via the first data and control/management interface when the circuit card is inserted into the circuit card slot; and

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using the port circuitry to facilitate establishment of a link between the first network data storage system and a second network data storage system, the link, when established, facilitating data transmission from a source device to a target device, the source device being in the first network data storage system, the target device being in the second network data storage system and being used to mirror data residing in the source device, said port circuitry being connected to the data storage system I/O controller via the second data and control/management interface on the network adaptor.

13. (Previously presented) The method of claim 12, wherein the switch comprises a fibre channel switch.

14. (Original) The method of claim 12, wherein the source device and the target device comprise respective logical data volumes.

15. (Original) The method of claim 9, wherein the source device and the target device comprise respective logical data volumes.

16. (Original) The method of claim 12, wherein the second network data storage system is geographically remote from the first network data storage system.